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A DEVICE FOR RECORDING HUMIDITY IN AMONG LEAVES OF PLANTS

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An instrument was developed for the purpose of recording relative humidity close to the ground in the foliage of pea and alfalfa plants where the use of a regular hygrograph would not be feasible. The sensitive element of this device is enclosed in a long piece of brass tubing which may easily be placed in practically any type of foliage.

Construction.--A Friez soil thermograph was used as the basis for this new device. The diaphragm, cable, and bulb were removed. A $\frac{3}{8}$ -inch hole was drilled just beneath the bracket which supported the pen arm in the rear end of the case. A piece of brass tubing 18 inches long by $\frac{5}{16}$ inch in diameter (fig. 1, A) which contains the sensitive element was fastened directly over this hole by means of a heavy brass flange (fig. 1, B) soldered to the end of the tube. The flange was fastened to the case with three $\frac{1}{8}$ -inch studs. Thirty-six $\frac{3}{16}$ -inch holes were drilled in two rows in the lower half of the tube to allow for air circulation and for drainage. The sensitive element is a strip of rattan $\frac{1}{16}$ inch in diameter and 16 inches in length. Fine brass wire was wound around each end of this rattan and used for attachment. The outer end was fastened to a piece of $\frac{1}{8}$ -inch threaded brass rod. This rod projected through a bushing at the end of the brass tube, and final adjustment was secured at this end by means of a nut. The wire on the inner end of the rattan was fastened directly to a very short lever (fig. 2, A) which indirectly operates the pen arm. An additional lever (fig. 2, B) and a very light spring (fig. 2, C) furnish just enough tension to take the slack from the rattan element and connection.

After the machine was built, it was calibrated in constant-humidity rooms at the Forest Products Laboratory of the U. S. Department of Agriculture at Madison, Wisconsin.

This combination of rattan in a brass tube has been used for some time at the Forest Products Laboratory for determining the percentage of moisture in forest duff.

If a soil thermograph is available, the entire cost of the changes to make this recorder should not be over \$10.

Explanation of Illustrations

Figure 1.--Hygrograph for use in foliage (adapted from the Friez soil thermograph). A, brass tubing which contains the sensitive rattan element; B, flange for attaching brass tubing to box.

Figure 2.--Mechanism of hygrograph used in foliage. A, short lever attached to rattan by means of fine wire; B, spring lever; C, coil spring.

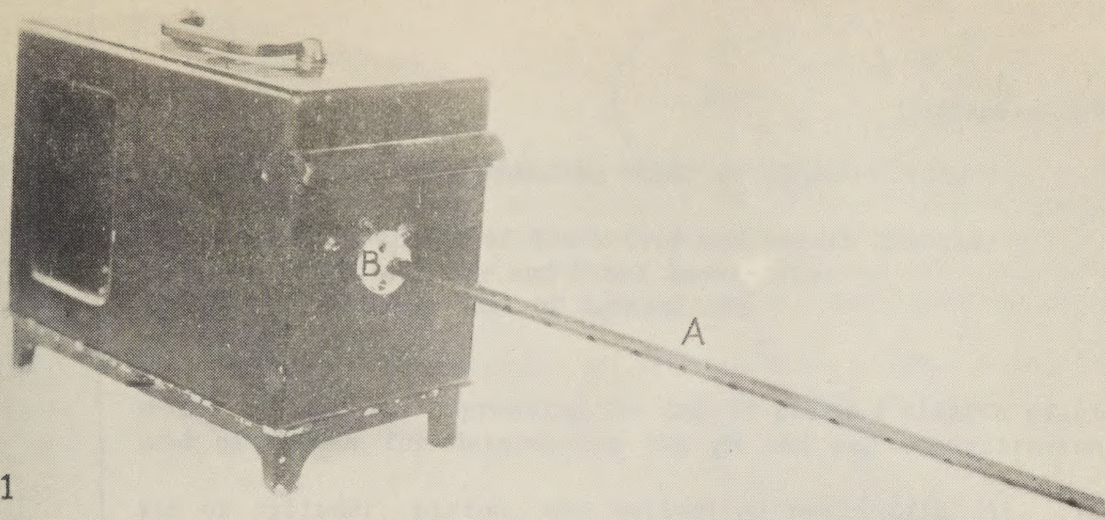


Fig. 1

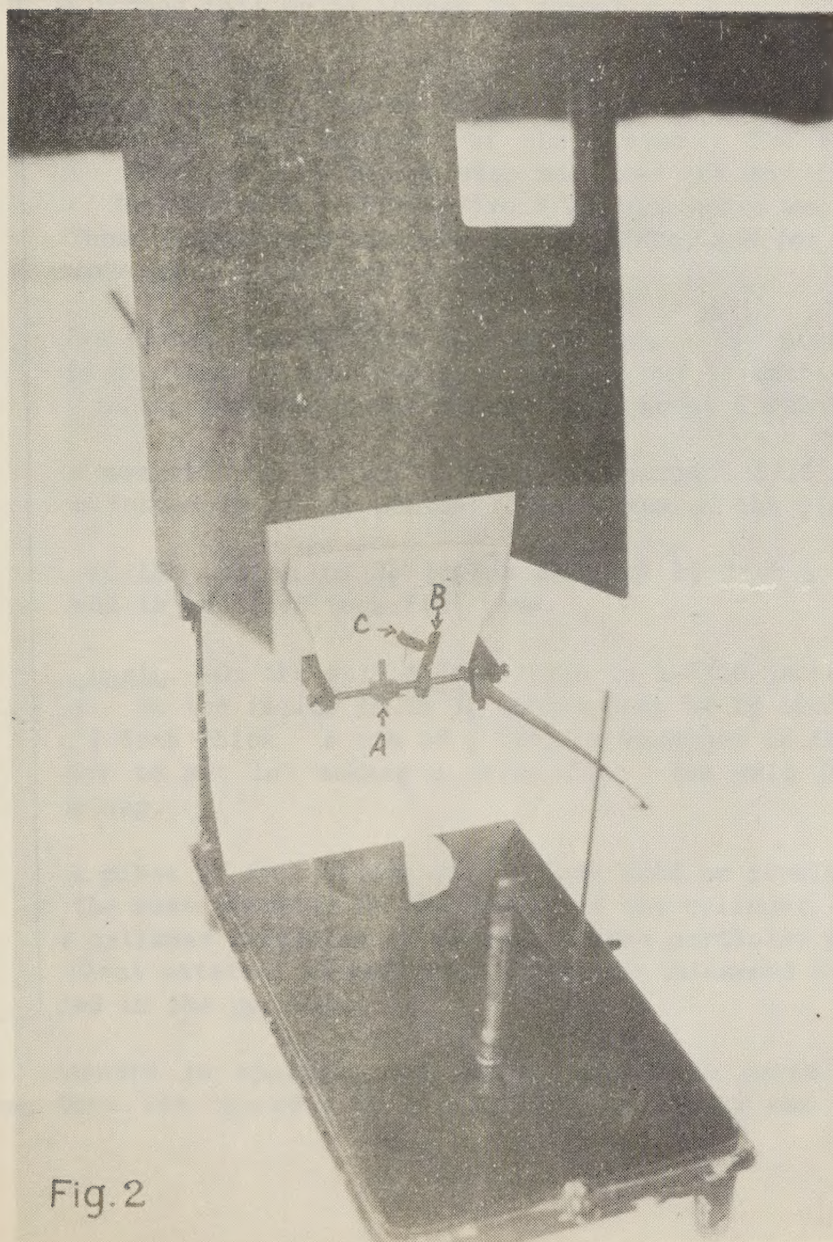


Fig. 2

